

**Amendments to the Claims:**

1 1. (Cancelled).

1 2. (Currently Amended) The mass analyzer of claim ~~1~~5, wherein the electron filament is  
2 configured to generate electrons when heated in an electric field of less than 70  
3 volts per centimeter.

1 3. (Currently Amended) The mass analyzer of claim ~~1~~5, wherein the electron filament is  
2 configured to generate electrons when heated in an electric field of less than 50  
3 volts per centimeter.

1 4. (Currently Amended) The mass analyzer of claim ~~1~~5, wherein the electron filament is  
2 configured to generate electrons while a background pressure in the source is  
3 greater than  $1.0 \times 10^{-4}$  Torr.

1 5. (Currently Amended) A mass analyzer comprising an electron source, the electron  
2 source including:  
3 an electron filament coupled to an electrical supply, the electron filament  
4 including a conductive wire or conductive ribbon, the electron filament  
5 configured to generate electrons when heated and configured to generate  
6 electrons while a background pressure in the source is greater than  $1.0 \times$   
7  $10^{-5}$  Torr;  
8 a plurality of nanofilaments disposed on the surface of the electron filament; and

9        a filament body for positioning the electron filament relative to a mass filter~~The~~  
10                ~~mass analyzer of claim 1, wherein the electron filament is configured to~~  
11                ~~generate electrons while a background pressure in the source is greater~~  
12                ~~than  $1.0 \times 10^{-5}$  Torr.~~

1    6. (Cancelled)

1    7. (Currently Amended) A mass analyzer comprising an electron source, the electron  
2                source including:  
3                an electron filament coupled to an electrical supply configured to pass a current  
4                through the electron filament;  
5                a plurality of nanofilaments disposed on the surface of the electron filament;  
6                a filament body for positioning the electron filament relative to a mass filter; and  
7                a magnetic field configured for directing electrons generated using the electron  
8                filament. ~~The mass analyzer of claim 6, wherein the means for directing~~  
9                ~~electrons is a magnetic field.~~

1    8. (Currently Amended) A mass analyzer comprising an electron source, the electron  
2                source including:  
3                an electron filament coupled to an electrical supply configured to pass a current  
4                through the electron filament;  
5                a plurality of nanofilaments disposed on the surface of the electron filament;  
6                a filament body for positioning the electron filament relative to a mass filter; and  
7                means for directing electrons generated using the electron filament;

8 | ~~The mass analyzer of claim 6~~, wherein the electron source is configured such that  
9 | the directed electrons are accelerated to an energy of approximately 70  
10 | electron volts.

1 | 9. (Currently Amended) The mass analyzer of claim 67, wherein the nanofilaments  
2 | include carbon nanotubes.

1 | 10. (Currently Amended) The mass analyzer of claim 68, wherein the nanofilaments  
2 | include boron.

1 | 11. (Currently Amended) The mass analyzer of claim 67, ~~wherein the~~ wherein the electron  
2 | source is configured to generate electrons for electron capture ionization.

1 | 12. (Currently Amended) The mass analyzer of claim 68, wherein the electron source is  
2 | configured to generate electrons for electron impact ionization.

1 | 13. (Currently Amended) The mass analyzer of claim 67, wherein the electron source is  
2 | configured to generate electrons for chemical ionization.

1 | 14. (Currently Amended) The mass analyzer of claim 67, wherein the electron source is  
2 | configured to generate electrons for ion fragmentation.

1 | 15. (Currently Amended) The mass analyzer of claim 68, wherein the electron filament is  
2 | a ribbon or wire.

1 | 16. (Currently Amended) The mass analyzer of claim 67, further including a mass filter.

1 17. (Currently Amended) The mass analyzer of claim 68, further including a sample  
2 source.

1 18. (Cancelled).

1 19. (Currently Amended) The filament assembly of claim 1820, wherein the electron  
2 filament is a wire or a ribbon.

1 20. (Currently Amended) A filament assembly comprising:  
2 an electron filament coupled to an electrical supply configured to provide a  
3 current through the electron filament and to hold the electron filament at a  
4 potential of approximately 70 Volts relative to part of an electron source;  
5 a plurality of nanofilaments disposed on the surface of the electron filament; and  
6 means for positioning the electron filament. ~~The filament assembly of claim 18,~~  
7 ~~wherein the potential is approximately 70 Volts..~~

1 21. (Original) An analysis system comprising:  
2 an electron filament coupled to an electrical supply configured to pass a current  
3 through the electron filament and to hold the electron filament at a  
4 potential of approximately 70 Volts relative to an other part of the analysis  
5 system, the electron filament including a conductive wire or conductive  
6 ribbon, the electron filament configured to generate electrons when  
7 heated;  
8 a plurality of nanofilaments disposed on the surface of the electron filament;

9 a filament body for positioning the electron filament relative to the other part of  
10 the analysis system;  
11 means for directing electrons generated using the electron filament;  
12 a mass filter configured to filter ions generated using the generated electrons; and  
13 an ion detector configured to detect the filtered ions.

1 22. (Original) The analysis system of claim 21, further including a chromatograph  
2 configured to introduce a sample to the mass filter.

1 23. (Original) The analysis system of claim 21, further including a second mass filter  
2 configured to introduce a sample to the mass filter configured to filter ions  
3 generated using the generated electrons.

1 24. (Original) A method of analyzing a sample comprising:  
2 generating electrons with energy of approximately 70eV, using an electron  
3 filament coupled to an electrical supply configured to pass a current  
4 through the electron filament and to hold the electron filament at an  
5 approximate potential, the electron filament including a conductive wire or  
6 conductive ribbon, the electron filament further including a plurality of  
7 nanofilaments disposed on the surface of the electron filament;  
8 causing the generated electrons to contact the sample;  
9 ionizing the sample using the generated electrons, to produce ions;  
10 separating the produced ions; and  
11 detecting the separated ions.

1 25. (Currently Amended) The method of claim 24, wherein the ~~separation~~separated ions  
2 are separated in time.

1 26. (Original) The method of claim 24, wherein the produced ions are produced using  
2 chemical ionization.

1 27. (Original) The method of claim 24, further including maintaining a background  
2 pressure greater than  $1 \times 10^{-5}$  Torr.

1 28. (Cancelled)

1 29. (Currently Amended) The method of claim 2830, further including generating the ion  
2 using a mass filter.

1 30. (Currently Amended) A method of analyzing a sample comprising:  
2 generating electrons using an electron filament coupled to an electrical supply  
3 configured to pass a current through the electron filament and to hold the  
4 electron filament at an approximate potential, the electron filament  
5 including a conductive wire or conductive ribbon, the electron filament  
6 further including a plurality of nanofilaments disposed on the surface of  
7 the electron filament;  
8 causing the generated electrons to contact an ion in a region with a background  
9 pressure of greater than  $1 \times 10^{-4}$  Torr;  
10 fragmenting the ion using the generated electrons, to produce an ion fragment;  
11 filtering the produced ion fragment; and

12     ~~detecting the filtered ion fragment. The method of claim 28, wherein the generated~~  
13             ~~electrons are caused to contact the ion in a region with a background~~  
14             ~~pressure of greater than  $1 \times 10^{-4}$  Torr.~~

1     31. (Original) A filament assembly comprising:  
2             an electron filament configured to be coupled to an electrical supply for providing  
3             a current through the electron filament and for holding the electron  
4             filament at a potential relative to part of an electron source; and  
5             a plurality of nanoparticles disposed within the electron filament.

1     32. (Original) The filament assembly of claim 31, wherein the nanoparticles are  
2             configured to modify grain boundaries within the electron filament.

1     33. (Original) The filament assembly of claim 31, wherein the nanoparticles include  
2             polyhedral oligomeric silsesquioxane.

1     34. (Currently Amended) The filament assembly of claim 31, wherein the nanoparticles  
2             include a silicon compound of the chemical composition ~~shown in FIG. 7~~  
3              $\text{Si}_8\text{O}_8\text{R}_8$ .

1     35. (Cancelled).

1     36. (Original) The filament assembly of claim 31, further including means for  
2             positioning the electron filament relative to a mass filter.

1 37. (Original) The filament assembly of claim 31, wherein the potential relative to part  
2 of an electron source is approximately 70 Volts.

1 38. (Original) The filament assembly of claim 31, further including means for  
2 positioning the electron filament relative to an electron gun.

1 39. (New) The mass analyzer of claim 8, further including a mass filter.

1 40. (New) The mass analyzer of claim 8, wherein the nanofilaments include carbon  
2 nanotubes.

1 41. (New) The mass analyzer of claim 7, wherein the electron source is configured to  
2 generate electrons for electron impact ionization.